

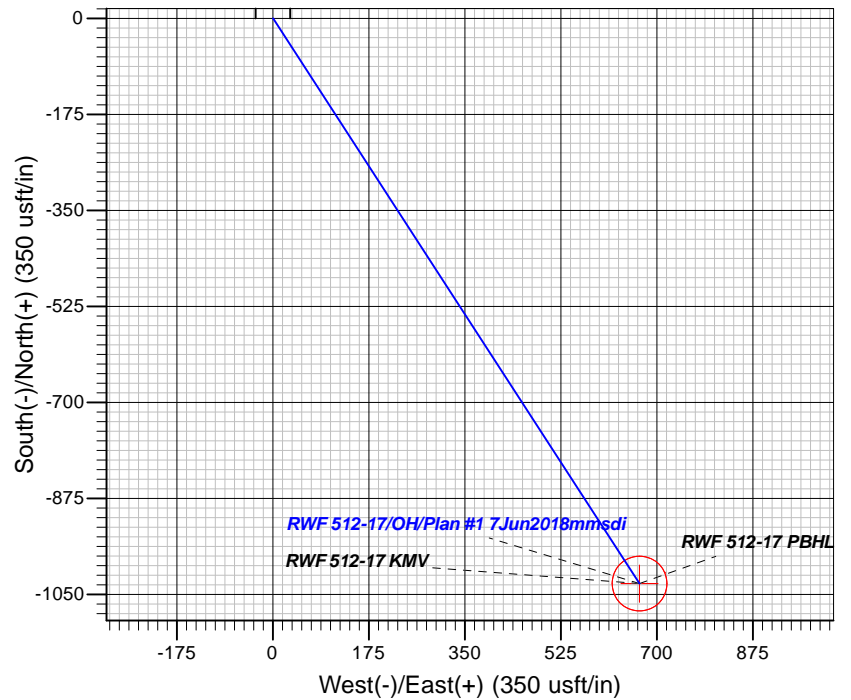
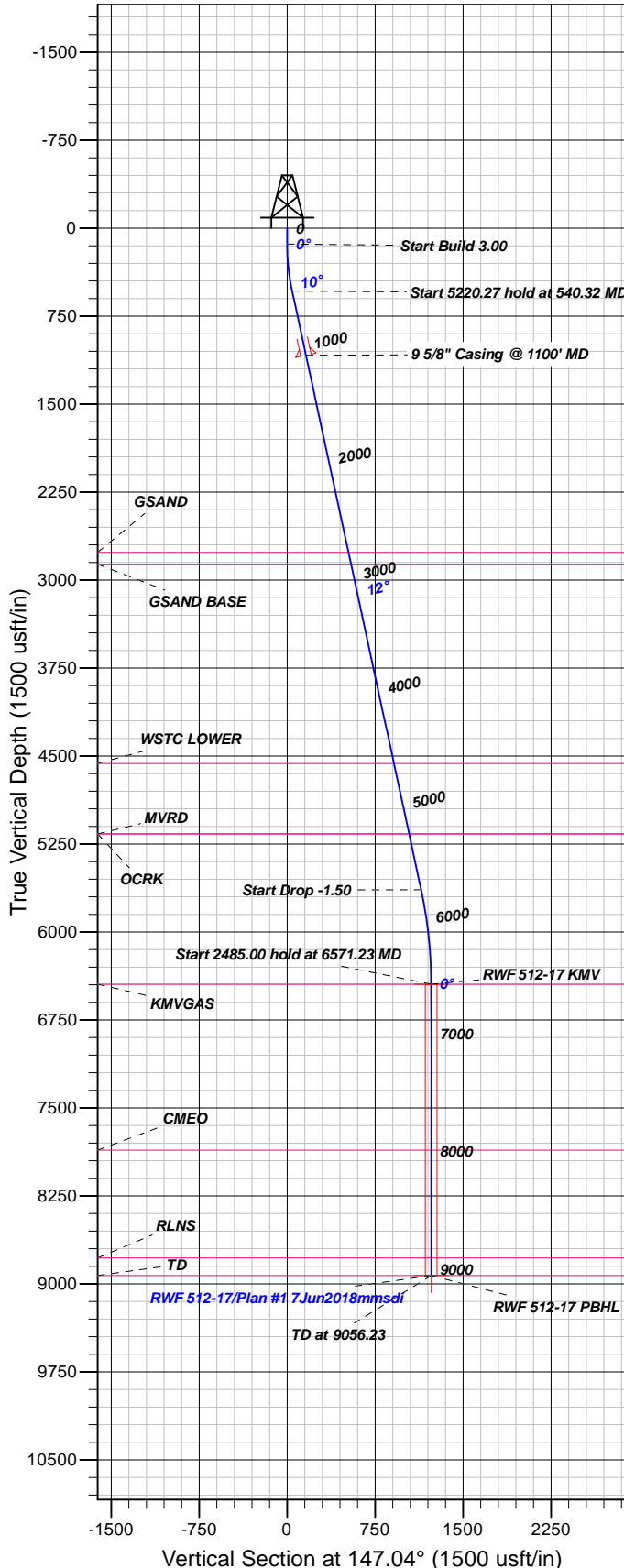


Azimuths to True North  
Magnetic North: 9.43°

Magnetic Field  
Strength: 51582.5nT  
Dip Angle: 65.80°  
Date: 6/7/2018  
Model: HDGM

## Well Details: RWF 512-17

GL 6174.5' & RKB 24' @ 6198.50usft  
+N/-S 0.00 +E/-W 0.00 Northing 1627383.30 Easting 2317158.50 Latitude 39.5309673 Longitude -107.9211930 Slot RWF 512-17 (A6)



## FORMATION TOP DETAILS

TVDPATH	MDPATH	FORMATION
2765.00	2819.16	GSAND
2865.00	2921.46	GSAND BASE
4565.00	4660.47	WSTC LOWER
5165.00	5274.24	MVRD
5165.00	5274.24	OCRK
6445.00	6571.23	KMVGAS
7860.00	7986.23	CMEQ
8780.00	8906.23	RLNS
8930.00	9056.23	TD

Plan: Plan #1 7Jun2018mmsdi

17:32, June 12 2018  
Created By: Mel Mireles

PROJECT DETAILS: Garfield County, CO NAD83

Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Central Zone

System Datum: Mean Sea Level

## CASING DETAILS

TVD	MD	Name	Size
1084.41	1100.00	5/8" Casing @ 1100' MD	9.62

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	135.00	0.00	0.00	135.00	0.00	0.00	0.00	0.00	0.00	
3	540.32	12.16	147.04	537.28	-35.95	23.31	3.00	147.04	42.85	
4	5760.59	12.16	147.04	5640.43	-958.51	621.60	0.00	0.001142.42		
5	6571.23	0.00	0.00	6445.00	-1030.41	668.23	1.50	180.001228.12		RWF 512-17 KMV
6	9056.23	0.00	0.00	8930.00	-1030.41	668.23	0.00	0.001228.12		RWF 512-17 PBHL

## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
RWF 512-17 KMV	6445.00	-1030.41	668.23	1626335.45	2317799.03	39.5281383	-107.9188240	Circle (Radius: 50.00)
- plan hits target center								
RWF 512-17 PBHL	8930.00	-1030.41	668.23	1626335.45	2317799.03	39.5281383	-107.9188240	Point
- plan hits target center								



# **TEP Rocky Mountain LLC**

**Garfield County, CO NAD83**

**DOE 1-M-18**

**RWF 512-17 - Slot RWF 512-17 (A6)**

**OH**

**Plan: Plan #1 7Jun2018mmsdi**

## **Standard Planning Report**

**12 June, 2018**



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well RWF 512-17 - Slot RWF 512-17 (A6)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft
<b>Site:</b>	DOE 1-M-18	<b>North Reference:</b>	True
<b>Well:</b>	RWF 512-17	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1 7Jun2018mmsdi		

<b>Project</b>	Garfield County, CO NAD83		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		

Site		DOE 1-M-18			
Site Position:		Northing:	1,627,441.60 usft	Latitude:	39.5311260
From:	Map	Easting:	2,317,141.30 usft	Longitude:	-107.9212595
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.53 °

Well	RWF 512-17 - Slot RWF 512-17 (A6)					
Well Position	+N/-S	-57.82 usft	Northing:	1,627,383.30 usft	Latitude:	39.5309673
	+E/-W	18.75 usft	Easting:	2,317,158.50 usft	Longitude:	-107.9211930
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,174.50 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	6/7/2018	9.43	65.80	51,583

<b>Design</b>	Plan #1 7Jun2018mmsdi			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	147.04

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
135.00	0.00	0.00	135.00	0.00	0.00	0.00	0.00	0.00	0.00	
540.32	12.16	147.04	537.28	-35.95	23.31	3.00	3.00	0.00	147.04	
5,760.59	12.16	147.04	5,640.43	-958.51	621.60	0.00	0.00	0.00	0.00	
6,571.23	0.00	0.00	6,445.00	-1,030.41	668.23	1.50	-1.50	0.00	180.00	RWF 512-17 KMV
9,056.23	0.00	0.00	8,930.00	-1,030.41	668.23	0.00	0.00	0.00	0.00	RWF 512-17 PBHL

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well RWF 512-17 - Slot RWF 512-17 (A6)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft
<b>Site:</b>	DOE 1-M-18	<b>North Reference:</b>	True
<b>Well:</b>	RWF 512-17	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1 7Jun2018mmsdi		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
135.00	0.00	0.00	135.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 3.00</b>									
200.00	1.95	147.04	199.99	-0.93	0.60	1.11	3.00	3.00	0.00
300.00	4.95	147.04	299.79	-5.98	3.88	7.12	3.00	3.00	0.00
400.00	7.95	147.04	399.15	-15.40	9.99	18.36	3.00	3.00	0.00
500.00	10.95	147.04	497.78	-29.17	18.92	34.77	3.00	3.00	0.00
540.32	12.16	147.04	537.28	-35.95	23.31	42.85	3.00	3.00	0.00
<b>Start 5220.27 hold at 540.32 MD</b>									
600.00	12.16	147.04	595.63	-46.50	30.15	55.42	0.00	0.00	0.00
700.00	12.16	147.04	693.38	-64.17	41.61	76.48	0.00	0.00	0.00
800.00	12.16	147.04	791.14	-81.84	53.08	97.55	0.00	0.00	0.00
900.00	12.16	147.04	888.89	-99.52	64.54	118.61	0.00	0.00	0.00
1,000.00	12.16	147.04	986.65	-117.19	76.00	139.67	0.00	0.00	0.00
1,100.00	12.16	147.04	1,084.41	-134.86	87.46	160.74	0.00	0.00	0.00
<b>9 5/8" Casing @ 1100' MD</b>									
1,200.00	12.16	147.04	1,182.16	-152.53	98.92	181.80	0.00	0.00	0.00
1,300.00	12.16	147.04	1,279.92	-170.21	110.38	202.86	0.00	0.00	0.00
1,400.00	12.16	147.04	1,377.68	-187.88	121.84	223.93	0.00	0.00	0.00
1,500.00	12.16	147.04	1,475.43	-205.55	133.30	244.99	0.00	0.00	0.00
1,600.00	12.16	147.04	1,573.19	-223.22	144.76	266.05	0.00	0.00	0.00
1,700.00	12.16	147.04	1,670.95	-240.90	156.22	287.12	0.00	0.00	0.00
1,800.00	12.16	147.04	1,768.70	-258.57	167.68	308.18	0.00	0.00	0.00
1,900.00	12.16	147.04	1,866.46	-276.24	179.14	329.24	0.00	0.00	0.00
2,000.00	12.16	147.04	1,964.22	-293.91	190.60	350.31	0.00	0.00	0.00
2,100.00	12.16	147.04	2,061.97	-311.59	202.07	371.37	0.00	0.00	0.00
2,200.00	12.16	147.04	2,159.73	-329.26	213.53	392.44	0.00	0.00	0.00
2,300.00	12.16	147.04	2,257.49	-346.93	224.99	413.50	0.00	0.00	0.00
2,400.00	12.16	147.04	2,355.24	-364.60	236.45	434.56	0.00	0.00	0.00
2,500.00	12.16	147.04	2,453.00	-382.28	247.91	455.63	0.00	0.00	0.00
2,600.00	12.16	147.04	2,550.75	-399.95	259.37	476.69	0.00	0.00	0.00
2,700.00	12.16	147.04	2,648.51	-417.62	270.83	497.75	0.00	0.00	0.00
2,800.00	12.16	147.04	2,746.27	-435.30	282.29	518.82	0.00	0.00	0.00
2,819.16	12.16	147.04	2,765.00	-438.68	284.49	522.85	0.00	0.00	0.00
<b>GSAND</b>									
2,900.00	12.16	147.04	2,844.02	-452.97	293.75	539.88	0.00	0.00	0.00
2,921.46	12.16	147.04	2,865.00	-456.76	296.21	544.40	0.00	0.00	0.00
<b>GSAND BASE</b>									
3,000.00	12.16	147.04	2,941.78	-470.64	305.21	560.94	0.00	0.00	0.00
3,100.00	12.16	147.04	3,039.54	-488.31	316.67	582.01	0.00	0.00	0.00
3,200.00	12.16	147.04	3,137.29	-505.99	328.13	603.07	0.00	0.00	0.00
3,300.00	12.16	147.04	3,235.05	-523.66	339.60	624.13	0.00	0.00	0.00
3,400.00	12.16	147.04	3,332.81	-541.33	351.06	645.20	0.00	0.00	0.00
3,500.00	12.16	147.04	3,430.56	-559.00	362.52	666.26	0.00	0.00	0.00
3,600.00	12.16	147.04	3,528.32	-576.68	373.98	687.32	0.00	0.00	0.00
3,700.00	12.16	147.04	3,626.08	-594.35	385.44	708.39	0.00	0.00	0.00
3,800.00	12.16	147.04	3,723.83	-612.02	396.90	729.45	0.00	0.00	0.00
3,900.00	12.16	147.04	3,821.59	-629.69	408.36	750.51	0.00	0.00	0.00
4,000.00	12.16	147.04	3,919.35	-647.37	419.82	771.58	0.00	0.00	0.00
4,100.00	12.16	147.04	4,017.10	-665.04	431.28	792.64	0.00	0.00	0.00
4,200.00	12.16	147.04	4,114.86	-682.71	442.74	813.71	0.00	0.00	0.00
4,300.00	12.16	147.04	4,212.62	-700.38	454.20	834.77	0.00	0.00	0.00
4,400.00	12.16	147.04	4,310.37	-718.06	465.66	855.83	0.00	0.00	0.00

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well RWF 512-17 - Slot RWF 512-17 (A6)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft
<b>Site:</b>	DOE 1-M-18	<b>North Reference:</b>	True
<b>Well:</b>	RWF 512-17	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1 7Jun2018mmsdi		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,500.00	12.16	147.04	4,408.13	-735.73	477.12	876.90	0.00	0.00	0.00
4,600.00	12.16	147.04	4,505.88	-753.40	488.59	897.96	0.00	0.00	0.00
4,660.47	12.16	147.04	4,565.00	-764.09	495.52	910.70	0.00	0.00	0.00
<b>WSTC LOWER</b>									
4,700.00	12.16	147.04	4,603.64	-771.07	500.05	919.02	0.00	0.00	0.00
4,800.00	12.16	147.04	4,701.40	-788.75	511.51	940.09	0.00	0.00	0.00
4,900.00	12.16	147.04	4,799.15	-806.42	522.97	961.15	0.00	0.00	0.00
5,000.00	12.16	147.04	4,896.91	-824.09	534.43	982.21	0.00	0.00	0.00
5,100.00	12.16	147.04	4,994.67	-841.77	545.89	1,003.28	0.00	0.00	0.00
5,200.00	12.16	147.04	5,092.42	-859.44	557.35	1,024.34	0.00	0.00	0.00
5,274.24	12.16	147.04	5,165.00	-872.56	565.86	1,039.98	0.00	0.00	0.00
<b>OCRK - MVRD</b>									
5,300.00	12.16	147.04	5,190.18	-877.11	568.81	1,045.40	0.00	0.00	0.00
5,400.00	12.16	147.04	5,287.94	-894.78	580.27	1,066.47	0.00	0.00	0.00
5,500.00	12.16	147.04	5,385.69	-912.46	591.73	1,087.53	0.00	0.00	0.00
5,600.00	12.16	147.04	5,483.45	-930.13	603.19	1,108.59	0.00	0.00	0.00
5,700.00	12.16	147.04	5,581.21	-947.80	614.65	1,129.66	0.00	0.00	0.00
5,760.59	12.16	147.04	5,640.43	-958.51	621.60	1,142.42	0.00	0.00	0.00
<b>Start Drop -1.50</b>									
5,800.00	11.57	147.04	5,679.00	-965.31	626.01	1,150.52	1.50	-1.50	0.00
5,900.00	10.07	147.04	5,777.22	-981.05	636.22	1,169.29	1.50	-1.50	0.00
6,000.00	8.57	147.04	5,875.90	-994.64	645.03	1,185.48	1.50	-1.50	0.00
6,100.00	7.07	147.04	5,974.97	-1,006.05	652.43	1,199.09	1.50	-1.50	0.00
6,200.00	5.57	147.04	6,074.36	-1,015.29	658.42	1,210.09	1.50	-1.50	0.00
6,300.00	4.07	147.04	6,174.00	-1,022.33	662.99	1,218.49	1.50	-1.50	0.00
6,400.00	2.57	147.04	6,273.83	-1,027.19	666.14	1,224.28	1.50	-1.50	0.00
6,500.00	1.07	147.04	6,373.78	-1,029.85	667.86	1,227.45	1.50	-1.50	0.00
6,571.23	0.00	0.00	6,445.00	-1,030.41	668.23	1,228.12	1.50	-1.50	-206.44
<b>Start 2485.00 hold at 6571.23 MD - KMGAS - RWF 512-17 KMW</b>									
6,600.00	0.00	0.00	6,473.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
6,700.00	0.00	0.00	6,573.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
6,800.00	0.00	0.00	6,673.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
6,900.00	0.00	0.00	6,773.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
7,000.00	0.00	0.00	6,873.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
7,100.00	0.00	0.00	6,973.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
7,200.00	0.00	0.00	7,073.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
7,300.00	0.00	0.00	7,173.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
7,400.00	0.00	0.00	7,273.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
7,500.00	0.00	0.00	7,373.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
7,600.00	0.00	0.00	7,473.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
7,700.00	0.00	0.00	7,573.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
7,800.00	0.00	0.00	7,673.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
7,900.00	0.00	0.00	7,773.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
7,986.23	0.00	0.00	7,860.00	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
<b>CME0</b>									
8,000.00	0.00	0.00	7,873.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
8,100.00	0.00	0.00	7,973.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
8,200.00	0.00	0.00	8,073.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
8,300.00	0.00	0.00	8,173.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
8,400.00	0.00	0.00	8,273.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
8,500.00	0.00	0.00	8,373.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
8,600.00	0.00	0.00	8,473.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
8,700.00	0.00	0.00	8,573.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well RWF 512-17 - Slot RWF 512-17 (A6)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft
<b>Site:</b>	DOE 1-M-18	<b>North Reference:</b>	True
<b>Well:</b>	RWF 512-17	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1 7Jun2018mmsdi		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,800.00	0.00	0.00	8,673.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
8,900.00	0.00	0.00	8,773.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
8,906.23	0.00	0.00	8,780.00	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
RLNS									
9,000.00	0.00	0.00	8,873.78	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
9,056.23	0.00	0.00	8,930.00	-1,030.41	668.23	1,228.12	0.00	0.00	0.00
TD at 9056.23 - TD - RWF 512-17 PBHL									

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude		Longitude
- hit/miss target										
- Shape										
RWF 512-17 KMV	0.00	0.00	6,445.00	-1,030.41	668.23	1,626,335.45	2,317,799.03	39.5281384		-107.9188240
- plan hits target center										
- Circle (radius 50.00)										
RWF 512-17 PBHL	0.00	0.00	8,930.00	-1,030.41	668.23	1,626,335.45	2,317,799.03	39.5281384		-107.9188240
- plan hits target center										
- Point										

Casing Points							Casing Diameter (in)	Hole Diameter (in)
Measured Depth (usft)	Vertical Depth (usft)	Name						
1,100.00	1,084.41	9 5/8" Casing @ 1100' MD					9.62	13.50

Formations							Dip (°)	Dip Direction (°)
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology					
2,819.16	2,765.00	GSAND					0.00	0.00
2,921.46	2,865.00	GSAND BASE					0.00	0.00
4,660.47	4,565.00	WSTC LOWER					0.00	0.00
5,274.24	5,165.00	OCRK					0.00	0.00
5,274.24	5,165.00	MVRD					0.00	0.00
6,571.23	6,445.00	KMVGAS					0.00	0.00
7,986.23	7,860.00	CME0					0.00	0.00
8,906.23	8,780.00	RLNS					0.00	0.00
9,056.23	8,930.00	TD					0.00	0.00

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well RWF 512-17 - Slot RWF 512-17 (A6)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6174.5' & RKB 24' @ 6198.50usft
<b>Site:</b>	DOE 1-M-18	<b>North Reference:</b>	True
<b>Well:</b>	RWF 512-17	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1 7Jun2018mmsdi		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
135.00	135.00	0.00	0.00	Start Build 3.00
540.32	537.28	-35.95	23.31	Start 5220.27 hold at 540.32 MD
5,760.59	5,640.43	-958.51	621.60	Start Drop -1.50
6,571.23	6,445.00	-1,030.41	668.23	Start 2485.00 hold at 6571.23 MD
9,056.23	8,930.00	-1,030.41	668.23	TD at 9056.23